REMARKS

The rejection of claims 1-10 and 16-18 under 35 USC 103(a) as being unpatentable over Ruhl (USP 4,770,955) in view of Itoh (US Pub. 2004/0175607) is respectfully traversed.

Claim 1 has been amended to make it clear that the separate gas inlets (air and oxygen) dedicated to each of the electrode layers respectively define passages (2) that pass through the cells in direct contact with the electrode layer to which each gas inlet is dedicated for enabling gas transfer through the electrode layers. This enables reactions to occur as explained in the specification on page 7, last paragraph, lines 23-26. The passages (2) as now specified in claim 1 are in direct contact with the electrode layer to which each gas inlet is dedicated as is shown in Fig. 2. Ruhl '955 employs gaskets which are impervious to fuel so that the fuel (hydrogen) in tube 11 cannot directly contact cathode 5 and the fuel (oxygen) in tube 14 will not contact the anode 4. This is expressly stated in col. 3, lines 15-17 and lines 31-34 in Ruhl '955. More specifically, as stated in Ruhl Col. 3, lines 31-34 "Gasket 8 is disposed between separator 3 and electrolyte 6 to form substantially gas-tight seals to protect anode 4 from oxygen within tube 14" and on lines 16-17, "so that fuel in tube 11 cannot directly contact cathode 5". Accordingly, the gas inlets 11 and 14 in Ruhl are not designed to define passages through the cell in direct contact with the electrode layers to which each of the gas inlets are dedicated as is taught in claim 1. In fact, Ruhl is using gaskets 7 and 8 to prevent this from

happening.

The Examiner admits that Ruhl does not disclose a protuberance extended into the electrode layer.

The Examiner should take note that the protuberance recited in claim 1 is of the electrolyte layer and represents the first compact zone in claim 1. The function of the protuberance and passages (2) defined by each gas inlet create a self-tight fuel cell architecture which does not require a gasket arrangement as taught in Ruhl.

Moreover, as required in claim 1, and as shown in Fig. 3, the protuberance of the electrolyte layer (17) extends into the electrode layer for forming an area of low porosity disposed adjacent the gas inlet dedicated to the other (opposite) electrode layer. As discussed on page 10, lines 6-21, of the subject application, the anode 12 and the cathode 14 are protected by the electrolyte protuberance 17 and creates a self-tight fuel cell architecture which does not require the gaskets taught in Ruhl.

Itoh '607 teaches a SOFC fuel cell having an external air-inlet 13 for the cathode 4,6 which is connected from outside the cell stack and a (hydrogen) inlet 11 for the anode 2, which is also connected from outside the cell stack as is shown in figs. 7 and 8 of Itoh '607. These externally located gas inlets do not define or form (internal) passages (2) as shown in Fig. 2 of the subject invention for direct gas contact with the electrode layer to which each gas inlet is dedicated as required in claim 1 to facilitate gas transfer through the electrode layers.

In claim 1, at least one of the two electrode layers has a first compact zone which is a protuberance of the electrolyte layer extending into said electrode layer. Reference (8) in Itoh represents a seal portion as discussed in paragraph [0046-0048] respectively which has a corner film portion 8(b) for covering both end portions of the other pair of opposed side surfaces of the fuel electrode substrate 2. There is nothing in the teaching of Itoh which teaches or suggests forming a protuberance of the electrolyte layer as is called for in claim 1. The seal portion 8 or corner film portion 8(b) are not part of the electrolyte and therefore cannot form a protuberance of the electrolyte layer, much less for defining the first compact zone of at least one of the two electrode layers as required in claim 1.

Accordingly, the interpretation of the Examiner is in error and Itoh does not disclose a protuberance of the electrolyte layer. The seal portion 8 in Itoh is used to seal the electrolyte film 4 not to form a protuberance of the electrolyte layer, for extending into the electrode layer as called for in claim 1. Moreover, Itoh does not teach a cell for a fuel cell which has a self-tight fuel cell architecture (no sealing gaskets) wherein each gas inlet defines passages through the cell in direct contact with the electrode layer to which each gas inlet is dedicated and includes a solid electrolyte layer located between the two electrode layers having a protuberance representing a fist compact zone formed by at least one of the two electrode layers for extending into such electrode layer for forming an area of low porosity disposed adjacent the gas inlet dedicated to the other electrode layer.

For all of the above reasons, claim 1 is clearly patentable over either Ruhl taken alone or in combination with Itoh for all of the reasons given above.

Claims 2-10 and 16-18 depend from claim 1 and are patentable for the same reasons given above.

The rejection of claims 11-15 under 35 USC 103(a) as being unpatentable over Ruhl '955 in view of Itoh as applied to claim 10 and further in view of Fischer (USP 3,554,808) is respectfully traversed.

Claim 10 is a dependent claim which depends from claim 1 and is clearly patentable over Ruhl and Itoh for the same reasons as given above. Fischer is totally silent with regard to the subject of forming a tight seal around the channels through the fuel cell stack and is silent as regards a protuberance of a bipolar plate. Accordingly, there is nothing in Fischer which when added to the teachings of Ruhl and Itoh, would render claims 11-15 obvious. Accordingly, claims 11-15 are clearly patentable for the all of the reasons given.

The rejection of claims 19 and 20 under 35 USC 103(a) as being unpatentable over Ruhl '955 in view of Fischer '808 is respectfully traversed.

Claim 19 has been amended to define the separate gas inlets dedicated to each of the electrode layers respectively with each gas inlet defining passages

through the cell in direct contact with the electrode layer to which each gas inlet is dedicated for enabling gas transfer through the electrode layers. This is not taught in Ruhl as explained earlier in connection with claim 1 and is necessary to make a self-tight fuel cell architecture in accordance with the subject application. Claim 19 further requires the use of bi-polar plates adjacent to each of the anode and cathode layer with each of the cathode and anode layers having a dense zone with a porosity larger than the porosity of the corresponding anode and cathode layer and having a cavity permitting a protuberance of the adjacent bi-polar plate to fit therein. The Examiner has admitted that Ruhl does not teach a protuberance and Fischer is totally silent with regard to the subject of tightness around the channels 17 through the fuel cell stack and does not teach forming a protuberance from a bi-polar plate to fit within a cavity formed by a dense zone of each of the anode and cathode layers.

For all of the above reasons, claim 19 is clearly patentable over Ruhl taken alone or in combination with Fischer.

Claim 20 is dependent upon claim 19 and is therefore patentable for the same reasons as given above.

The rejection of claim 21 as being unpatentable over Ruhl in view of Itoh and further in view of Meacham (USP 5,527,634) under 35 USC 103(a) is respectfully traversed. Claim 21 is dependent upon claim 1 and as explained earlier, neither Ruhl nor Itoh alone or in combination teach the cell arrangement of claim 1. In fact,

passages. Meacham, is also directed to seals 7, 10 of aluminized stainless steel which are bonded to the separators 1 and have no relation to the teaching of the present invention.

For all of the above reasons, claims 1-21 are clearly patentable over the references of record taken individually or in combination.

Reconsideration and allowance of claims 1-21 is respectfully solicited.

Respectfully submitted,

Eugene Lieberstein
Registration No. 24,645

Customer # 79681
BAKER & HOSTETLER LLP
45 Rockefeller Plaza
New York, NY 10111
Tel: 212-589-4634 /Fax: 212-589-4201

CERTIFICATE OF MAILING

I hereby certify that this Amendment w/attachment is being submitted to the USPTO via First Class Mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria VA 22313-1450, on December 3, 2010.

By _____